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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/596,876	06/19/2000	Stephane Menard	SIMN:004	5658

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EXAMINER

VORTMAN, ANATOLY

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 01/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/596,876

Applicant(s)

MENARD ET AL.

Examiner

Anatoly Vortman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-26 is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-10, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 5-7, 11-14 and 17-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims recite the limitation "said first contact arm" in line 1 of claim 8. There is insufficient antecedent basis for this limitation in the claims.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US/4,887,430 to Kroll et al., (Kroll) in view of DE/3,731,146 to Wolf.

Regarding claim 1, Kroll disclosed (Fig. 1-3) a shape memory alloy (SMA) switch comprising:

a substrate (14); a SMA element (16, 20) attached to said substrate (14) at first (18) and second (22) locations and having a first portion (16) and a second portion (20), said first portion (16) contracting to place said SMA element in a first conformation upon being heated above a predetermined temperature (Fig. 1) and said second portion (20) contracting to place said SMA element in a second conformation upon being heated above said predetermined temperature; and

a cursor (12) attached to said SMA element at a location substantially intermediate said first (16) and said second (20) portions to reciprocate between a first position when said SMA element is in said first conformation (Fig. 1) and a second position when said SMA element is in said second conformation (Fig. 2), but did not disclose that said SMA element is continuous.

Wolf disclosed (Fig. 1) a shape memory alloy switch (Fig. 1) of similar design as the switch disclosed by Kroll, and having continuous SMA element (1, 2).

The inventions of Kroll and Wolf are from the same field of endeavor (SMA actuators), therefore the purpose of continuous SMA element disclosed by Wolf would be recognized in the invention of Kroll.

It would have been obvious to a person of ordinary skill in the thermal switch art at the time the invention was made to substitute said two piece SMA element of Kroll with the continuous SMA element as taught by Wolf in order to simplify the device and to reduce the parts content.

Regarding claim 15, Kroll disclosed (Fig. 1-3) a bistable shape memory alloy (SMA) switch comprising:

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a substrate (14);

a transducer connected to said substrate (14) comprising a SMA element (16, 20) having first (Fig. 1) and second (Fig. 2) conformations, and including:

- a) a first heating unit (24, 26) coupled to a first segment (16) of said SMA element to heat said first segment (16) so that said SMA element assumes said first conformation (Fig. 1); and
- b) a second heating unit (26, 38) coupled to a second segment (20) of said SMA element to heat said second segment (20) above said predetermined temperature causing contraction of said second segment (20) so that said SMA element assumes said second conformation (Fig. 2);

a cursor (12) coupled to said SMA element to reciprocate between first and second positions as said SMA element (16, 20) alternates between said first and said second conformations;

a first contact arm (38) in sliding contact with said cursor (12) to move from an open position to a closed position as aid cursor (12) moves from said second (Fig. 2) to said first (Fig. 1) position, but did not disclose that said SMA element is continuous.

Wolf disclosed (Fig. 1) a shape memory alloy switch (Fig. 1) of similar design as the switch disclosed by Kroll, and having continuous SMA element (1, 2).

The inventions of Kroll and Wolf are from the same field of endeavor (SMA actuators), therefore the purpose of continuous SMA element disclosed by Wolf would be recognized in the invention of Kroll.

It would have been obvious to a person of ordinary skill in the thermal switch art at the time the invention was made to substitute the two piece SMA element of Kroll with the continuous SMA element as taught by Wolf in order to simplify the device and to reduce parts content.

Regarding claims 2 and 3, Kroll disclosed an electrically conductive first contact arm (38) in sliding contact with said cursor (12) to move from an open position to a closed position as said cursor (12) moves from said second (Fig. 2) to said first (Fig. 1) position.

Regarding claim 4, Kroll disclosed means (24, 26, and 28) for separately applying sufficient heat to said first (16) and said second (20) portions of said SMA element to reciprocate said cursor (12) between said first (Fig. 1) and said second (Fig. 2) positions.

Regarding claim 16, Wolf disclosed (Fig. 1) that the first and second heating units respectively comprise a first electrical circuit and a second electrical circuits (7-9), said first and second electrical circuits (7-9) sharing a common node (4) on the SMA element (1, 2).

***Allowable Subject Matter***

5. Claims 22-26 are allowed.
6. Claims 5-7, 11-14, and 17-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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7. Claims 8-10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US/4700541, 3725835, 5410290, 3634803, 5990777, 4772807, and 6016096 disclosed actuators having two-part SMA elements.

US/3893055, 4544988, 5206775, 4864824, and JP/1-183027 disclosed actuators utilizing SMA elements.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 703-308-7824. The examiner can normally be reached on 9:30-6:00, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo P. Picard can be reached on 703-308-0538. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Anatoly Vortman  
Examiner  
Art Unit 2835

A.V.  
November 28, 2001

A handwritten signature in cursive script, appearing to read "A. Vortman", followed by a horizontal line.